

## ABSTRACT

Various apparatus and methods for determining and utilizing the viscosity of the circulating blood of a living being over a range of shear rates for diagnostics and treatment such as detecting/reducing blood viscosity, work of the heart, contractility of the heart, for  
5 detecting/reducing the surface tension of the blood, for detecting plasma viscosity, for explaining/countering endothelial cell dysfunction, for providing high and low blood vessel wall shear stress data, red blood cell deformability data, lubricity of blood, and for treating different ailments such as peripheral arterial disease.